PROGRAM OPPORTUNITY NOTICE

Developing Advanced Energy Storage Technology Solutions to Lower Costs and Achieve Policy Goals

PON-13-302

http://www.energy.ca.gov/contracts/index.html

State of California

California Energy Commission

April 2014

(Deletions made after April 2014 are in strikethrough format. Additions are in bold, underlined text.)

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ATTACHMENTS

I. Introduction

A. Purpose of Solicitation

The purpose of this solicitation is to fund applied research and development projects that meet the following objectives:

- Optimize grid-level energy storage deployment with respect to location, size, and type; and
- Develop innovative utility-scale and generation energy storage technologies and applications to mitigate intermittent renewables and meet peak demand.

Energy storage will help to integrate renewable energy into the energy delivery system by managing variable and intermittent generation from sources such as wind and solar. The California Public Utilities Commission (CPUC) has identified energy storage procurement targets for investor-owned utilities (IOUs),[1] and the U.S. Department of Energy and California Independent System Operator have also identified the need for energy storage.[2] However, there are significant barriers to energy storage use, including: high capital costs; lack of information regarding performance; limited operational experience; and lack of comprehensive, standard, publicly available tools that analyze the financial and technical performance of energy storage systems.

Projects funded under this solicitation will help to address these barriers and meet the CPUC's procurement targets by: (1) developing computer models for the CPUC's energy storage use cases (i.e., energy storage use scenarios that take into account the location and regulatory function of the energy storage technology or system) to determine which storage technologies and systems are most optimal; and (2) developing advanced energy storage technologies and systems that can be demonstrated and deployed by IOUs.

See Part II of this solicitation for project eligibility requirements. Applications will be evaluated as follows: Stage One proposal screening and Stage Two proposal scoring.

B. Key Words/Terms

Word/Term	Definition
Applicant	The respondent to this solicitation
Application	An applicant's formal written response to this solicitation
CAM	*Commission Agreement Manager,* the person designated by the Energy Commission to oversee the performance of an agreement resulting from this solicitation and to serve as the main point of contact for the Recipient
EPIC	*Electric Program Investment Charge,* the source of funding for the projects awarded under this solicitation

[1] See CPUC Decision 13-10-040, October 17, 2013, http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M079/K533/79533378.PDF.

[2] See http://energy.gov/sites/prod/files/2013/12/f5/Grid%20Energy%20Storage%20December%202013.pdf; http://www.caiso.com/Documents/IS-1-ISOUsesEnergyStorage_GridOperationsandControl.pdf.

Word/Term	Definition
Energy Commission	California Energy Commission
IOU	*Investor-owned utility,* including Pacific Gas and Electric Co., San Diego Gas and Electric Co., and Southern California Edison
NOPA	*Notice of Proposed Award,* a public notice that identifies award recipients
Principal Investigator	The lead scientist or engineer for the applicant's project, who is responsible for overseeing the project; in some instances, the Principal Investigator and Project Manager may be the same person
Project Manager	The person designated by the applicant to oversee the project and to serve as the main point of contact for the Energy Commission
Project Partner	An entity or individual that contributes financially or otherwise to the project (e.g., match funding, provision of a pilot test site), and does not receive Energy Commission funds
Recipient	The recipient of an award under this solicitation
Solicitation	This entire document, including all attachments and exhibits ("solicitation" may be used interchangeably with "program opportunity notice")
State	State of California

C. Applicants' Admonishment

This solicitation contains application requirements and instructions. Applicants are responsible for **carefully reading** the solicitation, asking appropriate questions in a timely manner, ensuring that all solicitation requirements are met, submitting all required responses in a complete manner by the required date and time, and **carefully rereading** the solicitation before submitting an application. In particular, please carefully read the **Screening/Scoring Criteria and Grounds for Rejection** in Part IV, and the terms and conditions in Attachment 13.

Applicants are responsible for the cost of developing applications. This cost cannot be charged to the State. All submitted documents will become public records upon the posting of the Notice of Proposed Award.

D. Background

1. Electric Program Investment Charge (EPIC) Program

This solicitation will award projects funded by the EPIC, an electricity ratepayer surcharge established by the CPUC in December 2011.[3] The purpose of the EPIC program is to benefit the ratepayers of three IOUs, including Pacific Gas and Electric Co., San Diego Gas and Electric Co., and Southern California Edison. The EPIC funds clean energy technology projects that promote greater electricity reliability, lower costs, and increased safety.[4] In addition to

[3] See CPUC "Phase 1" Decision 11-12-035, December 15, 2011, http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/156050.PDF.

[4] See CPUC "Phase 2" Decision 12-05-037, May 24, 2012, http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/167664.PDF.

providing IOU ratepayer benefits, funded projects must lead to technological advancement and breakthroughs to overcome the barriers that prevent the achievement of the state's statutory energy goals.[5]

Annual program funds total $162 million per year, 80% of which will be administered by the California Energy Commission and 20% of which will be administered by the IOUs.

2. Program Areas, Strategic Objectives, and Funding Initiatives

EPIC projects must fall within the following **program areas** identified by the CPUC:

- Applied research and development;
- Technology demonstration and deployment; and
- Market facilitation

In addition, projects must fall within one of 18 general focus areas (**"strategic objectives"**) identified in the Energy Commission's EPIC Investment Plan[6] and within one or more specific focus areas (**"funding initiatives"**) identified in the plan. This solicitation targets the following program area, strategic objective, and funding initiatives:

- **Program Area A:** Applied Research and Development
- **Strategic Objective S8:** Integrate Grid-Level Energy Storage Technologies and Determine the Best Applications that Provide Locational Benefits
    - **Funding Initiative S8.1:** Optimize grid-level energy storage deployment with respect to location, size, and type
    - **Funding Initiative S8.2:** Develop innovative utility-scale and generation energy storage technologies and applications to mitigate intermittent renewables and meet peak demand

3. Applicable Laws, Policies, and Background Documents

This solicitation addresses the energy goals described in the following laws, policies, and background documents. Please see the discussion above for links to laws, policies, and background documents specific to EPIC.

Laws/Regulations

- **Assembly Bill (AB) 2514 - Energy Storage Systems (Statutes of 2010)**

  AB 2514 required the CPUC to determine targets for the procurement of viable, cost-effective energy storage systems by load-serving entities. The CPUC adopted the procurement targets in Decision 13-10-040, issued on October 17, 2013 (see the summary of Decision 13-10-040 in the "Policies/Plans" section below).

  Additional information: http://www.cpuc.ca.gov/PUC/energy/electric/storage.htm
  Applicable Law: California Public Utilities Code §§ 2835 et. seq., and § 9620 (http://www.leginfo.ca.gov/pub/09-10/bill/asm/ab_2501-2550/ab_2514_bill_20100929_chaptered.pdf)

[5] California Public Resources Code, Section 25711.5(a), http://www.leginfo.ca.gov/cgi-bin/displaycode?section=prc&group=25001-26000&file=25710-25712.

[6] http://www.energy.ca.gov/research/epic/documents/final_documents_submitted_to_CPUC/2012-11-01_EPIC_Application_to_CPUC.pdf.

- **Assembly Bill (AB) 32 ("The Global Warming Solutions Act of 2006")**

  AB 32 created a comprehensive program to reduce greenhouse gas (GHG) emissions in California. GHG reduction strategies include a reduction mandate of 1990 levels by 2020 and a cap-and-trade program. AB 32 also required the California Air Resources Board (ARB) to develop a Scoping Plan that describes the approach California will take to reduce GHGs. ARB must update the plan every five years.

  Additional information: http://www.arb.ca.gov/cc/ab32/ab32.htm
  Applicable Law: California Health and Safety Code §§ 38500 et. seq.

- **Renewables Portfolio Standard (Senate Bill (SB) X1-2, Statutes of 2011-12, First Extraordinary Session)**

  SB X1-2 requires that all California electricity retailers adopt the goals of 20 percent of retail sales from renewable energy sources by the end of 2013, 25 percent by the end of 2016, and 33 percent by the end of 2020.

Policies/Plans

- **CPUC Decision 13-10-040, "Decision Adopting Energy Storage Procurement Framework and Design Program" (2013)**

  The Decision establishes policies and mechanisms for electric energy storage procurement, as required by AB 2514 (described above). The IOU procurement target is 1,325 megawatts of energy storage by 2020, with installations required no later than the end of 2024.

  Additional information: http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M079/K533/79533378.PDF

- **Governor's Clean Energy Jobs Plan (2011)**

  In June 2011, Governor Jerry Brown announced a plan to invest in clean energy and increase efficiency. The plan includes a goal of producing 20,000 megawatts (MW) of renewable electricity by 2020 by taking the following actions: addressing peak energy needs, developing energy storage, creating efficiency standards for buildings and appliances, and developing combined heat and power (CHP) projects. Specific goals include building 8,000 MW of large-scale renewable and transmission lines, 12,000 MW of localized energy, and 6,500 MW of CHP.

  Additional information: http://gov.ca.gov/docs/Clean_Energy_Plan.pdf

- **Integrated Energy Policy Report (Biennial)**

  California Public Resources Code Section 25302 requires the Energy Commission to release a biennial report that provides an overview of major energy trends and issues facing the state. The IEPR assesses and forecasts all aspects of energy industry supply, production, transportation, delivery, distribution, demand, and pricing. The Energy Commission uses these assessments and forecasts to develop energy policies.

  Additional information: http://www.energy.ca.gov/energypolicy
  Applicable Law: California Public Resources §§ 25300 et. seq.

Reference Documents

Refer to the documents below for additional information about energy storage:

- The U.S. Department of Energy's *Grid Energy Storage* report (December 2013) http://energy.gov/sites/prod/files/2013/12/f5/Grid%20Energy%20Storage%20December%202013.pdf
- The *DOE/EPRI 2013 Electricity Storage Handbook in Collaboration with NRECA* (July 2013) http://www.sandia.gov/ess/publications/SAND2013-5131.pdf

E. FUNDING

1. Amount Available and Minimum/ Maximum Funding Amounts

There is **up to $6,000,000** available for grants awarded under this solicitation. Below are the total, minimum, and maximum amounts for each funding initiative. Each application may address only one initiative. Funds may be moved between initiatives if there is an insufficient number of passing proposals within each initiative.

Funding Initiative	Available Funding	Minimum Award Amount	Maximum Award Amount
S8.1: Optimize grid-level energy storage deployment with respect to location, size, and type	$1,000,000	$250,000	$1,000,000
S8.2: Develop innovative utility-scale and generation energy storage technologies and applications to mitigate intermittent renewables and meet peak demand	$5,000,000	$1,000,000	$3,000,000

2. Match Funding Requirement

Though match funding is not required for this solicitation, applications that include match funding will receive additional points during the scoring phase.

- **"Match funds"** include: (1) "cash in hand" funds; (2) equipment; (3) materials; (4) information technology services; (5) travel; (6) subcontractor costs; (7) contractor in-kind labor costs; and (8) "advanced practice" costs. Match funding sources include the prime contractor, subcontractors, and pilot test sites (e.g., pilot test site staff services). "Match funds" do not include Energy Commission awards, future/contingent awards from other entities (public or private), or the cost or value of the project work site.
    - **"Cash in hand" funds** means funds that are in the recipient's possession and are reserved for the proposed project, meaning that they have not been committed for use or pledged as match for any other project. "Cash in hand" funds include funding awards earned or received from other agencies for the proposed technologies or study (but not for the identical work). As applicable, proof that the funds exist as cash is required at the project kick-off meeting.
    - **"Equipment"** means an item with a unit cost greater than $5,000 and a useful life greater than one year. **Purchasing equipment with match funding is encouraged** because there are no disposition requirements at the end of the agreement for such equipment. Typically, grant recipients may continue to use equipment purchased with Energy Commission funds if the use is consistent with the intent of the original agreement.
    - **"Materials"** means tangible project items that cost less than $5,000 and have a useful life of less than one year.

- **"Information Technology Services"** means the design, development, application, implementation, support, and management of computer-based information systems directly related to the tasks in the Scope of Work. All information technology services in this area must comply with the electronic file format requirements in Subtask 1.1 (Products) of the Scope of Work.
- **"Travel"** means all travel required to complete the tasks identified in the Scope of Work. Travel includes in-state and out-of-state travel, and travel to conferences. Use of match funds for out-of-state travel and travel to conferences is encouraged.
- **"Subcontractor Costs"** means all costs incurred by subcontractors for the project, including labor and non-labor costs.
- **"Contractor in-Kind Labor Costs"** means contractor labor costs that are not charged to the Energy Commission.
- **"Advanced Practice Costs"** means costs not charged to the Energy Commission that represent the incremental cost difference between standard and advanced practices, measures, and products used to implement the proposed project. For example, if the cost of purchasing and/or installing insulation that meets the applicable building energy efficiency standard is $1/square foot and the cost of more advanced, energy efficient insulation is $3/square foot, the Recipient may count up to $2/square foot as match funds.

- Match funds may be spent only during the agreement term, either before or concurrently with EPIC funds. Match funds also must be reported in invoices submitted to the Energy Commission.
- All applicants providing match funds must submit commitment letters that: (1) identify the source(s) of the funds; (2) justify the dollar value claimed; (3) provide an unqualified (i.e., without reservation or limitation) commitment that guarantees the availability of the funds for the project; and (4) provide a strategy for replacing the funds if they are significantly reduced or lost. Please see Attachment 11, Commitment and Support Letter Form.

3. Change in Funding Amount

The Energy Commission reserves the right to:

- Increase or decrease the amount of funding allocated for this solicitation.
- Allocate any additional funds to passing applications, in rank order.
- Reduce funding to an amount deemed appropriate if the budgeted funds do not provide full funding for agreements. In this event, the Recipient and Commission Agreement Manager will reach agreement on a reduced Scope of Work commensurate with available funding.

F. KEY ACTIVITIES SCHEDULE

Key activities, dates, and times for this solicitation and for agreements resulting from this solicitation are presented below. An addendum will be released if the dates change for activities that appear in **bold.**

ACTIVITY	DATE	TIME *(PDT or PST)*
Solicitation Release	April 16, 2014	
Pre-Application Workshop	**April 30, 2014**	**10:00 a.m.**
Deadline for Written Questions	**May 5, 2014**	**5:00 p.m.**
Anticipated Distribution of Questions and Answers	~~May 8~~ **Week of July 14**, 2014	
Deadline to Submit Applications	~~**July 1**~~ ~~**August 4**~~ **August 18**, 2014	**3:00 p.m.**
Anticipated Notice of Proposed Award Posting Date	September 30, 2014	
Anticipated Energy Commission Business Meeting Date	December 10, 2014	
Anticipated Agreement Start Date	February 1, 2015	
Agreement End Date	March 31, 2017	

G. PRE-APPLICATION WORKSHOP

Energy Commission staff will hold one Pre-Application Workshop to discuss the solicitation with applicants. Participation is optional but encouraged. Applicants may attend the workshop in-person, via the internet (WebEx, see instructions below), or via conference call on the date and at the time and location listed below. Please call (916) 654-4381 or refer to the Energy Commission's website at www.energy.ca.gov/contracts/index.html to confirm the date and time.

Date and time: April 30, 2014, 10:00 a.m. – 12:00 noon
Location: California Energy Commission
1516 9th Street
Sacramento, CA 95814
Hearing Room A

WebEx Instructions:

- To join the WebEx meeting, go to https://energy.webex.com and enter the meeting number and password below:

  Meeting Number: 927 484 222
  Meeting Password: meeting@10am
  Topic: PON-13-302 Energy Storage

- To Logon with a Direct Phone Number: After logging into WebEx, a prompt will appear on-screen for a phone number. In the "Number" box, enter your area code and phone number and click "OK" to receive a call for the audio of the meeting. International callers may use the "Country/Region" button to help make their connection.

- To Logon with an Extension Phone Number: After you login, a prompt will ask for your phone number. Select "CANCEL." Call **1-866-469-3239** (toll-free in the U.S. and Canada). When prompted, enter the meeting number above and the unique Attendee

ID number listed in the top left area of the screen after login. International callers may dial in using the "Show all global call-in numbers" link (also in the top left area).

Telephone Access Only:

Call **1-866-469-3239** (toll-free in the U.S. and Canada). When prompted, enter the meeting number above. International callers may select their number from https://energy.webex.com/energy/globalcallin.php.

Technical Support:

- For assistance with problems or questions about joining or attending the meeting, please call WebEx Technical Support at **1-866-229-3239.** You may also contact Avtar Bining at (916) 327-1411.
- System Requirements: To determine whether your computer is compatible, visit: http://support.webex.com/support/system-requirements.html.
- Meeting Preparation: The playback of UCF (Universal Communications Format) rich media files requires appropriate players. Please determine whether the players are installed on your computer by visiting: https://energy.webex.com/energy/systemdiagnosis.php.

H. QUESTIONS

During the solicitation process, direct questions to the Commission Agreement Officer listed below:

Crystal Presley-Willis, Commission Agreement Officer
California Energy Commission
1516 Ninth Street, MS-18
Sacramento, California 95814
Telephone: (916) 654-5067
FAX: (916) 654-4423
E-mail: Crystal.Presley-Willis@energy.ca.gov

Applicants may ask questions at the Pre-Application Workshop, and may submit written questions via mail, email, and FAX. However, all questions must be received by the deadline listed in the "Key Activities Schedule."

A question and answer document will be e-mailed to all parties who attended the Pre-Application Workshop and provided their contact information on the sign-in sheet. The questions and answers will also be posted on the Commission's website at: http://www.energy.ca.gov/contracts/index.html.

Any verbal communication with a Commission employee concerning this solicitation is not binding on the State and will in no way alter a specification, term, or condition of the solicitation. Therefore, all communication should be directed in writing to the assigned Commission Agreement Officer.

II. Eligibility Requirements

A. Applicant Requirements

1. Eligibility

This solicitation is open to all public and private entities and individuals.

2. Terms and Conditions

Each grant agreement resulting from this solicitation will include terms and conditions that set forth the recipient's rights and responsibilities. By signing the Application Form (Attachment 1), each applicant agrees to enter into an agreement with the Energy Commission to conduct the proposed project according to the terms and conditions that correspond to its organization, without negotiation: (1) University of California terms and conditions; (2) U.S. Department of Energy terms and conditions; or (3) standard terms and conditions. The standard terms and conditions are located in Attachment 13. The University of California and U.S. Department of Energy terms and conditions are under negotiation and will be posted once finalized.

Failure to agree to the terms and conditions by taking actions such as failing to sign the Application Form or indicating that acceptance is based on modification of the terms will result in **rejection** of the application. Applicants **must read** the terms and conditions carefully. The Energy Commission reserves the right to modify the terms and conditions prior to executing grant agreements.

3. California Secretary of State Registration

California business entities and non-California business entities that conduct intrastate business in California and are required to register with the California Secretary of State must do so and be in good standing in order to enter into an agreement with the Energy Commission. If not currently registered with the California Secretary of State, applicants should contact the Secretary of State's Office as soon as possible. For more information, visit the Secretary of State's website at: www.sos.ca.gov.

B. Project Requirements

1. Applied Research and Development Stage

Projects must fall within the "applied research and development" stage, which includes activities that support pre-commercial technologies and approaches intended to solve specific problems in the electricity sector. By contrast, the "technology demonstration and deployment" stage involves the installation and operation of pre-commercial technologies or strategies at a scale that reflects actual operating, performance, and financial characteristics and risks.[7]

[7] See pages 1 and 2 of the Energy Commission's EPIC Investment Plan, http://www.energy.ca.gov/2012publications/CEC-500-2012-082/CEC-500-2012-082-SF.pdf.

2. **<u>Funding Initiative S8.1 Projects</u>: Develop Models for Optimizing Energy Storage Systems by Location, Size, and Type**

Projects must involve the development, testing, and validation of one or more computer models for the CPUC's energy storage use cases (shown in **Table 1** below), in order to determine the most optimal energy storage systems by location, size, and type.

<u>Table 1</u>
(from CPUC Decision 13-10-040, Table 1, p. 14)

Storage Grid Domains (Grid Interconnection Point)	**Regulatory Function**	**Use-Case Examples**
Transmission-Connected	Generation/Market	**(Co-Located Energy Storage)** Concentrated Solar Power, Wind + Energy Storage, Gas Fired Generation + Thermal Energy Storage
		(Stand-Alone Energy Storage) Ancillary Services, Peaker, Load Following
	Transmission Reliability (FERC)	Voltage Support
Distribution-Connected	Distribution Reliability	Substation Energy Storage (Deferral)
	Generation/Market	Distributed Generation + Energy Storage
	Dual-Use (Reliability & Market)	Distributed Peaker
Behind-the-Meter	Customer-Sited Storage	Bill Mgt/Permanent Load Shifting, Power Quality, Electric Vehicle Charging

Existing analytical tools are either unable to perform a comprehensive analysis under multiple scenarios or are not publicly available due to high cost and/or licensing restrictions. Computational challenges include: diverse energy sources; the disperse location of smaller storage within the transmission and distribution network; fast response times, measured in fractions of a cycle; and the range of potential services provided by each storage system (i.e., "stacking").

With respect to time, existing tools lack the time dimension factor or fidelity required in modeling certain locations on the grid, such as wholesale applications. The time dimension (i.e., the time between one minute and one hour) is significant in the use of energy storage for managing the variability of renewables and maintaining grid reliability at high levels of renewables penetration.

Project activities will include the development of publicly available analytical tools that are more comprehensive than any similar, existing tools. Models must capture the full range of various energy storage technologies, different use cases at various grid point connections, energy storage system performance characteristics, and energy storage costs and benefits. Models must also quantify the value of those benefits in developing sustainable business cases for CPUC energy storage use cases.

a. Model Requirements:

1) Support a single platform for integrating all inputs and outputs, to facilitate data processing. Include a database for: (1) all inputs and algorithms to determine the best energy storage and optimize the energy storage by type, size, use case, and location (grid domain and geographic); and (2) all output metrics, including cost, revenue, cash flow, life cycle costs, cost and revenue ratios, pay-back period, emissions reductions (greenhouse gas and others), renewable generation integration added, and cost-effectiveness (by comparison to conventional options such as demand response, peakers, and spinning reserves).

   The database must also include provisions for updating and expanding data inputs and new use cases, including any future output metrics.

2) Quantify the benefits of energy storage systems versus traditional technologies.
3) Provide a comprehensive, free, publicly available analytical tool that complies with the licensing provisions in Section 21(b) of the terms and conditions (see Attachment 13).
4) Support linkages with other public domain models, as required.
5) Include algorithms for optimizing operation by type, size, use case, and location.
6) Collect data needed to maximize technology life and performance.
7) Provide instructions, necessary documentation, and training for users.
8) Include all storage grid domains, regulatory functions, and use cases described in CPUC Decision 13-10-040 for the three IOUs.
9) Include all types of energy storage, including pumped hydro, compressed air, batteries, flywheel, gravity, ultra-capacitors, and others (e.g., hydrogen).
10) Support an energy storage power size range from 1 kW to 1,000 MW, and an energy storage capacity range from 1 minute to 10 hours.
11) Include all performance characteristics (e.g., power, energy capacity, efficiency, life cycles, durability, availability, and reliability), and degradation rates of all performance characteristics over the life of the energy storage system.
12) Include all costs of the energy storage system (e.g., capital cost, operating and maintenance costs, and installation costs), including costs for all energy system components such as battery, power converter/inverter, balance of plant, and operation and control (including hardware and software for interconnection).
13) Include any additional features and capabilities that enhance the usefulness of the developed model.
14) Use the following standard software application architecture components in compatible versions, unless the Commission Agreement Manager approves other software applications such as open source programs:
    - Microsoft ASP.NET framework, version 3.5 and up. Recommend 4.0.
    - Microsoft Internet Information Services (IIS), version 6 and up. Recommend 7.5.
    - Visual Studio.NET, version 2008 and up. Recommend 2010.
    - C# Programming Language with Presentation (UI), Business Object and Data Layers.
    - SQL (Structured Query Language).
    - Microsoft SQL Server 2008, Stored Procedures. Recommend 2008 R2.
    - Microsoft SQL Reporting Services. Recommend 2008 R2.

- XML (external interfaces).

15) Evaluate the following revenue options:

- **All available, applicable revenue-generating options that reflect the full economic value of energy storage** (for example, California Independent System Operator (CAISO) market revenue from energy and ancillary services,[8] resulting from a transparent bidding and allocation process). The energy revenue can be received in the day-ahead energy market or the real-time energy market. The CAISO currently has four ancillary service products, including: (1) regulation up; (2) regulation down; (3) spinning reserve; and (4) non-spinning reserve.[9]

  Additional revenue may be earned by providing a resource that can help utilities meet their resource adequacy/capacity requirements. Resource adequacy needs are determined in the CPUC's long-term procurement planning proceedings. Generation, efficiency, and energy storage procurement typically involves a request for offer process and long-term bilateral contracts between utilities and independent power producers.

- **Any additional revenue-generating options that may become available during the project.** Examples include new CAISO market products and revisions or enhancements to the resource adequacy process that may result in additional revenue for energy storage. Market products should be considered as a bundle where the value of and need for products are dependent on one another. Additional CAISO markets include:

  - Flexible ramping product (http://www.caiso.com/Documents/ Second Revised DraftFinalProposal-FlexibleRampingProduct.pdf)
  - Regulation Pay-for-Performance (per FERC Order 755),[10] which has been recently implemented (this is an alteration of the regulation up and down market rules, http://www.caiso.com/informed/Pages/StakeholderProcesses/PayforPerformanceRegulation.aspx)
  - Energy Imbalance Market (EIM), scheduled to be available in October 2014.[11] An EIM is an automated five-minute (economic) energy dispatch service. A qualified energy storage resource may be eligible to participate in the five-minute market.[12] Revenue from providing resource adequacy/capacity could be enhanced for energy storage through the development of a new planning objective, Flexible Resource Adequacy (also known as "Flexible RA"). The CPUC is investigating the implementation of a long-term resource planning process that includes more than capacity, considering the response and ramping capability of resources to help

[8] Ancillary services are services necessary to support the transmission of electric power from the seller to the purchaser. Types of ancillary services include: (1) scheduling and dispatch; (2) reactive power and voltage control; (3) loss compensation; (4) load following; (5) system protection; and (6) energy imbalance.

[9] See http://www.caiso.com/market/Pages/ProductsServices/Default.aspx.

[10] See https://www.ferc.gov/whats-new/comm-meet/2011/102011/E-28.pdf.

[11] http://www.caiso.com/Documents/EnergyImbalanceMarket_FrequentlyAskedQuestions.pdf.

[12] http://www.caiso.com/Documents/SecondRevisedStrawProposal-EnergyImbalanceMarket-Jul2_2013.pdf.

manage expected larger ramping due to increased renewable penetration, particularly solar (see the CAISO "Duck" chart, which illustrates the daily demand for non-renewable electricity).[13]

- **Any other revenue-generating options that can help make the large deployment of energy storage systems in California economically feasible.** For example, long-term needs for the future grid include inertia response and primary frequency response. As spinning fossil generators are replaced with increasing levels of wind and solar (which have much less inertia), the stability of the grid to sub-second contingencies may be affected.

  The energy storage industry, utilities, and operators are investigating the role of energy storage in providing stability to the system. There may be consideration for additional grid services that energy storage may provide in the future. The most notable avoided costs are transmission and distribution (T&D) investment deferrals on expensive transformer upgrades triggered by slow load growth. It is plausible that this T&D investment deferral avoided cost could also be considered as a source of revenue, depending on the business arrangement.

  Other considerations are indirect/societal benefits. If energy storage is used properly, it may have indirect benefits on operation, including reduced cost of electricity, improved reliability, or improved environmental performance of the grid. Reduced costs to consumers could result from more efficient operation of the existing generation fleet and more fully utilized T&D assets. Use of energy storage as a backup generator or to improve grid resiliency may also improve other reliability metrics that are not easily monetized. If energy storage can reduce curtailment of wind and solar and help fossil generators operate more efficiently, it may also help to reduce greenhouse gas emissions.

[13] See http://www.caiso.com/Documents/DR-EERoadmap.pdf, p. 7.

3. **Funding Initiative 8.2 Projects: Develop and Demonstrate Advanced Distributed Energy Storage Systems**

Projects must involve the development and pilot testing of advanced energy storage technologies and systems that provide high-value, cost-effective ancillary services and load following for the CPUC's energy storage use cases (see **Table 1**). Deployment of distributed energy resources coupled with advanced storage capability is necessary to meet the CPUC's energy storage procurement targets (1,325 MW energy storage by 2020, as shown in **Table 2** below).

Table 2, CPUC Energy Storage Procurement Targets

(From CPUC Decision 13-10-040, Table 2, p. 15)

Storage Grid Domain Point of Interconnection	2014	2016	2018	2020	Total
Southern California Edison					
Transmission	50	65	85	110	310
Distribution	30	40	50	65	185
Customer	10	15	25	35	85
Subtotal SCE	**90**	**120**	**160**	**210**	**580**
Pacific Gas and Electric					
Transmission	50	65	85	110	310
Distribution	30	40	50	65	185
Customer	10	15	25	35	85
Subtotal PG&E	**90**	**120**	**160**	**210**	**580**
San Diego Gas & Electric					
Transmission	10	15	22	33	80
Distribution	7	10	15	23	55
Customer	3	5	8	14	30
Subtotal SDG&E	**20**	**30**	**45**	**70**	**165**
Total - all 3 utilities	**200**	**270**	**365**	**490**	**1,325**

Attaining these energy storage targets is critical for meeting the 33 percent by 2020 Renewable Portfolio Standard goal (required by SB X1-2) and for reducing greenhouse gas emissions to 1990 levels by 2020 (required by AB 32).

Project goals include:

- Reducing the capital cost of energy storage;
- Improving the performance of energy storage systems and demonstrating cost-effective and sustainable business cases;
- Successfully demonstrating the use of energy storage systems and smart interconnection devices, such as smart inverters, to cost-effectively augment advanced energy storage techniques in integrating variable resources to the distribution grid while

helping to maintain system reliability and providing data on ratepayer use and on-site power production; and
- Showing the operating value of energy storage as part of pilot testing, focusing on applicable revenue generating streams, value propositions and their monetization, and other benefits of energy savings and energy management.

Projects must: (1) involve the pilot testing of a complete storage system, including storage technology, power conditioning systems (e.g., smart inverters), product integration, and grid interconnection; (2) advance the understanding of which use case assumptions (e.g., technology, size, application, and location) are cost-effective, given the energy storage technology and application(s); and (3) stimulate energy storage use case operation to address ancillary services and load following to maintain grid reliability and service local demand (**see Table 1**, column 3 (Use-Case Examples), row 2 (Stand-Alone Energy Storage).

a. Sample Projects

- **Compressed air energy storage (CAES)**

Projects may focus on improving the efficiency of CAES through use of systems such as advanced adiabatic CAES (AA-CAES). This system uses a thermal energy storage unit that absorbs heat from hot, compressed air and saves the heat energy for reheating the air before expansion. This theoretically improves the roundtrip efficiency. Also, there are no carbon emissions because the reheating is accomplished by the thermal energy storage.

Projects may also focus on the development of a high pressure/high temperature compressor design that can work without the need for cooling between compression stages.

- **Flywheels**

Though higher-mass flywheels are able to store more energy, the tensile strength of the flywheel material is limiting. Projects may involve the development of materials that combine high tensile strength with light weight (such as various composites), and/or research into advances in fabrication technology. Other possible efforts might focus on the geometry of the rotor shape, and on the composition of the bearings.

- **Batteries**

Application issues that are limiting for batteries of various types include the need for: increased power density and longer life; improved cycling times; enhanced energy density; and new or improved electrolytes for improved efficiency and stability, lower toxicity, lower cost, greater safety, and less expensive components and chemistries (e.g., zinc-iron, sodium-nickel chloride, and iron-chromium).

b. Technology and Other Requirements

- The subject technology ~~must~~ **should** meet the following projected goals:
  - Reduce the capital cost of energy storage to: less than $1,000/kW installed; less than $200/kWh installed; and less than 15 cents/kWh/cycle levelized
  - Improve energy storage system performance (system cycle efficiency to greater than 80%, and system life to greater than 5,000 cycles)
- The pilot test must include simulated real-time grid services. Recipients must coordinate the pilot test with applicable stakeholders.
- Pilot test must be located within a California electric IOU service territory**, or pilot tests must be based on a use case and grid point connection site located**

within IOU service territory. Applicants must describe the use case and grid point connection site in Attachment 1 (Application Form).

- Pilot tests must provide ancillary services and load following.

4. Ratepayer Benefits, Technological Advancements, and Breakthroughs

California Public Resources Code Section 25711.5(a) requires EPIC-funded projects to:

- Benefit electricity ratepayers; and
- Lead to technological advancement and breakthroughs to overcome the barriers that prevent the achievement of the state's statutory energy goals.

The CPUC defines "ratepayer benefits" as greater reliability, lower costs, and increased safety.[14] Accordingly, the Project Narrative Form (Attachment 4) and the "Goals and Objectives" section of the Scope of Work Template (Attachment 6) must describe how the project will: (1) benefit California IOU ratepayers by increasing reliability, lowering costs, and/or increasing safety; and (2) lead to technological advancement and breakthroughs to overcome barriers to achieving the state's statutory energy goals.

5. Test Plan

Include a Test Plan in the Project Narrative (Attachment 4) that describes how actual project benefits will be measured and quantified, such as by pre and post-project energy use (kilowatt hours, kilowatts) and cost. Any estimates of energy savings or GHG impacts must be calculated using the References for Calculating Electricity End-Use, Electricity Demand, and GHG Emissions (Attachment 12).

[14] CPUC "Phase 2" Decision 12-05-037 at page 19, http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/167664.PDF.

III. Application Organization and Submission Instructions

A. Application Format, Page Limits, and Number of Copies

The following table summarizes the application formatting and page limit requirements:

Format	• **Font:** 11-point, arial (excluding excel spreadsheets) • **Margins:** No less than one inch on all sides (excluding headers and footers) • **Spacing:** Single spaced, with a blank line between each paragraph • **Pages:** Numbered and printed double-sided • **Labeling:** Tabbed and labeled as required in Sections B and C below • **Binding:** Original binder clipped; all other copies spiral or comb bound (binders discouraged) • **File Format:** MS Word XP (.doc format), excluding excel spreadsheets • **File Storage:** Electronic files of the application must be submitted on a CD-ROM or USB memory stick
Page Limits	• Page limits are as follows: o **Executive Summary** (Attachment 2): **two** pages o **Fact Sheet** (Attachment 3): **two** pages o **Project Narrative Form** (Attachment 4): **ten** pages o **Project Team Form** (Attachment 5): **one** page for each form and **two** pages for each resume o **Reference and Work Product Form** (Attachment 9): **two** pages for project descriptions o **Commitment and Support Letter Form** (Attachment 11): **two** pages, excluding cover page The following attachments may not cumulatively exceed **sixty** pages: o **Executive Summary Form** o **Fact Sheet Template** o **Project Narrative Form** o **Project Team Form *(resumes do not count toward the page limit)*** o **Scope of Work Template** (Attachment 6) • There are no page limits for the following: o **Application Form** (Attachment 1) o **Budget Forms** (Attachment 7) o **CEQA Compliance Form** (Attachment 8) o **Contact List Template** (Attachment 10)
Number of Copies of the Application	• **Ten** hard copies (including one copy with original signatures) • **One** electronic copy (on a CD-ROM or USB memory stick)

B. APPLICATION DELIVERY

Include the following label information on the mailing envelope:

Applicant's Project Manager Applicant's Name Street Address City, State, and Zip Code PON-13-302 Contracts, Grants, and Loans Office, MS-18 California Energy Commission 1516 Ninth Street, 1st Floor Sacramento, California 95814

Applications must be delivered to the Energy Commission's Contracts, Grants, and Loans Office in a sealed package (in person or via U.S. mail or courier service) during normal business hours, prior to the date and time specified in the "Key Activities Schedule" in Part I of this solicitation. Applications received after the specified date and time are considered late and will not be accepted. Postmark dates of mailing, e-mail, and facsimile (FAX) transmissions are not acceptable in whole or in part, under any circumstances.

C. APPLICATION ORGANIZATION AND CONTENT

1. Submit applications in the order specified below.
2. Address only <u>one</u> funding initiative (S8.1 or S8.2) in each application.
3. Label the proposal application cover "Program Opportunity Notice PON-13-302" and include: (a) the title of the application; and (b) the applicant's name.
4. Separate each section of the proposal by a <u>tab</u> that is labeled with the tab number and section title indicated below.

Tab/Attachment Number	Title of Section
1	Application Form
2	Executive Summary
3	Fact Sheet
4	Project Narrative
5	Project Team
6	Scope of Work
7	Budget
8	CEQA Compliance Form
9	References and Work Product
10	Contact List
11	Commitment and Support Letters

Below is a description of each required section of the application:

1. **Application Form (Attachment 1)**
   This form requests basic information about the applicant and the project. The application must include an original form that includes all requested information and is signed by an authorized representative of the applicant's organization.

2. **Executive Summary Form (Attachment 2)**
   The Executive Summary must include: a project description; the project goals and objectives to be achieved; an explanation of how the goals and objectives will be achieved, quantified, and measured; and a description of the project tasks and overall management of the agreement.

3. **Fact Sheet Template (Attachment 3)**
   The project fact sheet must present project information in a manner suitable for publication (if the project receives funding, the Energy Commission may use the fact sheet to publicize the project). The fact sheet must follow the template, which includes a summary of project specifics and a description of the issue addressed by the project, a project description, and anticipated benefits for the state of California.

4. **Project Narrative Form (Attachment 4)**
   This form will include the majority of the applicant's responses to the Scoring Criteria in Part IV.

5. **Project Team Form (Attachment 5)**
   Identify by name all key personnel[15] assigned to the project, including the project manager and principal investigator (if applicable). Clearly describe their individual areas of responsibility. Include the information required for each individual, including a resume (maximum two pages, printed double-sided).

6. **Scope of Work Template (Attachment 6)**
   Applicants must include a completed Scope of Work for each project, as instructed in the template. The Scope of Work identifies the tasks required to complete the project. It includes a project schedule that lists all products, meetings, and due dates. All work must be scheduled for completion within 36 to 48 months of the project start date.

   Electronic files for **Parts I-IV** of the Scope of Work are in **MS Word. Part V** (Project Schedule) is in **MS Excel**.

7. **Budget Forms (Attachment 7)**
   The budget forms are in MS Excel format and consist of eight main worksheets. Detailed instructions for completing them are included at the beginning of Attachment 7. **Read the instructions before completing the worksheets**. Complete and submit information on **all** budget worksheets. The salaries, rates, and other costs entered on the worksheets will become a part of the final agreement.

[15] "Key personnel" are individuals that are critical to the project due to their experience, knowledge, and/or capabilities.

Name of Worksheet	Tab Number
Task Summary	B-1
Category Summary	B-2
Prime Labor Rates	B-3
Labor Rates for each Subcontractor	B-3 (a-z)
Prime Non-Labor Rates	B-4
Non-Labor Rates for each Subcontractor	B-4 (a-z)
Direct Operating Expenses	B-5
Match Funding	B-6
~~Prime loaded rates~~	~~B-7~~
~~Subcontractor Loaded Rates~~	~~B-7 (a-z)~~
Rate Summary	~~B-8~~ **B-7**

1) All project expenditures (match share and reimbursable) must be made within the approved agreement term. Match share requirements are discussed in Part I of this solicitation. The entire term of the agreement and projected rate increases must be considered when preparing the budget.
2) The budget must reflect estimates for **actual** costs to be incurred during the agreement term. The Energy Commission may only approve and reimburse for actual costs that are properly documented in accordance with the grant terms and conditions. Rates and personnel shown must reflect the rates and personnel the applicant would include if selected as a Recipient.
3) The proposed rates are considered capped and may not change during the agreement term. The Recipient will only be reimbursed for **actual** rates up to the rate caps.
4) The budget must **NOT** include any Recipient profit from the proposed project, either as a reimbursed item, match share, or as part of overhead or general and administrative expenses (subcontractor profit is allowable). Please review the terms and conditions and budget forms (Attachment 7) for additional requirements.
5) The budget must allow for the expenses of all meetings and products described in the Scope of Work. Meetings may be conducted at the Energy Commission or by conference call, as determined by the Commission Agreement Manager.
6) Applicants must budget for permits and insurance. Permitting costs may be accounted for in match share (please see the discussion of permits in the Scope of Work, Attachment 6).
7) **Prevailing wage requirement:** Applicants must pay prevailing wages (i.e., rates pre-determined by the California Department of Industrial Relations) to all workers employed on public works projects that exceed $1,000. Public works projects involve demolition, installation, repair, or maintenance work. If the proposed project involves such work, the Applicant must assume that the project is a public work and budget accordingly unless it obtains a determination from the California Department of Industrial Relations or a court of competent jurisdiction that the project is not a public work. Please see the terms and conditions for additional information about the prevailing wage requirement.

8. California Environmental Quality Act (CEQA) Compliance Form (Attachment 8)

The Energy Commission requires the information on this form to facilitate its evaluation of the project under CEQA (Public Resources Code Section 21000 et. seq.), a law that requires state and local agencies in California to identify, award, and mitigate the significant environmental impacts of their actions. The form will also help applicants to determine CEQA compliance obligations by identifying which parts of the project may trigger CEQA. If the project includes only activities that do not trigger CEQA (such as paper studies), the worksheet will help to identify and document this.

Failure to complete the CEQA process in a timely manner may result in cancellation of the award and allocation of funding to the next highest-scoring project.

9. Reference and Work Product Form (Attachment 9)

1) Section 1: Provide applicant and subcontractor references as instructed.
2) Section 2: Provide a list of past projects detailing technical and business experience of the applicant (or any member of the project team) that is related to the proposed work. Identify past projects that resulted in market-ready technology, advancement of codes and standards, and/or advancement of state energy policy. Include copies of up to ~~five~~ **three** of the applicant or team member's recent publications in scientific or technical journals related to the proposed project, as applicable.

10. Contact List Template (Attachment 10)

The list identifies the names and contact information of the project manager, administrator, and accounting officer.

11. Commitment and Support Letters Form (Attachment 11)

A commitment letter commits an entity or individual to providing the service or funding described in the letter. A support letter details an entity or individual's support for the project.

1) Commitment Letters
   - Applicants must submit a **match funding** commitment letter signed by each representative of the entity or individual that is committing to providing match funding. The letter must: (1) identify the source(s) of the funds; and (2) guarantee the availability of the funds for the project.
   - If the project involves a **pilot test,** the applicant must include a letter signed by an authorized representative of the proposed test site that commits to providing the site for the proposed testing activities.
   - **Project partners** that are making contributions other than match funding or a test site must submit a commitment letter signed by an authorized representative that: (1) identifies how the partner will contribute to the project; and (2) commits to making the contribution.

2) Support Letters

   All applicants must include at least one support letter from a project stakeholder (i.e., an entity or individual that will benefit from or be involved in the project) that: (1) describes the stakeholder's interest or involvement in the project; (2) indicates the extent to which the project has the support of the relevant industry and/or organizations; and (3) describes any support it intends (but does not necessarily commit) to provide for the project, such as funding or provision of a pilot test site.

IV. Evaluation and Award Process

A. Application Evaluation

Applications will be evaluated and scored based on responses to the information requested in this solicitation. To evaluate applications, the Energy Commission will organize an Evaluation Committee that consists primarily of Energy Commission staff. The Evaluation Committee may use technical expert reviewers to provide an analysis of applications. Applications will be evaluated in two stages:

1. Stage One: Application Screening

The Contracts, Grants, and Loans Office and/or the Evaluation Committee will screen applications for compliance with the Screening Criteria in **Section E** of this Part. **Applications that fail any of the screening criteria will be rejected.**

2. Stage Two: Application Scoring

Applications that pass Stage One will be submitted to the Evaluation Committee for review and scoring based on the Scoring Criteria in **Section F** of this Part.

- The scores for each application will be the average of the combined scores of all Evaluation Committee members.
- **A minimum score of 70.00 points** is required for the application to be eligible for funding. In addition, the application must receive a score of **49.00 points** for criteria **1−4** to be eligible for funding.
- **Clarification Interviews:** The Evaluation Committee may conduct optional in-person or telephone interviews with applicants during the evaluation process to clarify and/or verify information submitted in the application. However, these interviews may not be used to change or add to the content of the original application. Applicants will not be reimbursed for time spent answering clarifying questions.

B. Ranking, Notice of Proposed Awards, and Agreement Development

1. Ranking and Notice of Proposed Awards

Applications that receive a minimum score of 70.00 points for all criteria will be ranked according to their score.

- The Energy Commission will post a **Notice of Proposed Award (NOPA)** that includes: (1) the total proposed funding amount; (2) the rank order of applicants; and (3) the amount of each proposed award. The Commission will post the NOPA at its headquarters in Sacramento and on its website, and will mail it to all parties that submitted an application. Proposed awards must be approved by the Commission at a business meeting.
- **Debriefings:** Unsuccessful applicants may request a debriefing after the release of the NOPA by contacting the Agreement Officer listed in Part I. A request for debriefing must be received **no later than 15 calendar days** after the NOPA is released.
- The Energy Commission reserves the right to:
    - Allocate any additional funds to passing applications, in rank order; and
    - Negotiate with successful applicants to modify the project scope, level of funding, or both.

2. Agreements

Applications recommended for funding will be developed into a grant agreement to be considered at an Energy Commission Business Meeting. Recipients may begin the project only after full execution of the grant agreement (i.e., approval at a business meeting and signature by the Recipient and the Energy Commission).

- **Resolution Requirement *(for government agency recipients only)*:** Prior to approval of the agreement at a business meeting, government agency recipients (e.g., federal, state, and local governments; air/water/school districts; joint power authorities; and state universities) must provide a resolution that authorizes the agency to enter into the agreement and is signed by a representative authorized to execute the agreement and all documents related to the award.

  Resolutions must include: (1) a brief description of the project; (2) the award amount; and (3) an acceptance of the award.
- **Agreement Development:** If approved at a business meeting, the Contracts, Grants, and Loans Office will send the Recipient a grant agreement for approval and signature. The agreement will include the applicable terms and conditions and will incorporate this solicitation by reference. The Energy Commission reserves the right to modify the award documents (including the terms and conditions) prior to executing any agreement.
- **Failure to Execute an Agreement:** If the Energy Commission is unable to execute an agreement, it reserves the right to cancel the pending award and to fund the next highest-ranked, eligible application.
- **Agreement Amendment:** The executed agreement may be amended by mutual consent of the Energy Commission and the Recipient. The agreement may require amendment as a result of project review, changes in project scope, and/or availability of funding.

C. Grounds to Reject an Application or Cancel an Award

Applications that do not pass the screening stage will be rejected. In addition, the Energy Commission reserves the right to reject an application and/or to cancel an award if the following circumstances are discovered at any time during the application or agreement process:

- The application contains false or intentionally misleading statements or references that do not support an attribute or condition contended by the applicant.
- The application is intended to erroneously and fallaciously mislead the State in its evaluation and the attribute, condition, or capability is a requirement of this solicitation.
- The application does not literally comply or contains caveats that conflict with the solicitation, and the variation or deviation is material.
- The applicant has previously received funding through a Public Interest Energy Research (PIER) agreement, has received the PIER royalty review letter (which the Energy Commission annually sends out to remind past recipients of their obligations to pay royalties), and has not responded to the letter or is otherwise not in compliance with repaying royalties.
- The applicant has received unsatisfactory evaluations from the Energy Commission or another California state agency.
- The applicant is a business entity that is not in good standing with the California Secretary of State.
- The applicant has not demonstrated that it has the financial capability to complete the project.

- The application is not submitted in the format specified in Part III, Sections A and B of the solicitation.

D. MISCELLANEOUS

1. Solicitation Cancellation and Amendment

It is the policy of the Energy Commission not to solicit applications unless there is a bona fide intention to award an agreement. However, if it is in the State's best interest, the Energy Commission reserves the right to do any of the following:

- Cancel this solicitation;
- Revise the amount of funds available under this solicitation;
- Amend this solicitation as needed; and/or
- Reject any or all applications received in response to this solicitation.

If the solicitation is amended, the Energy Commission will send an addendum to all parties who requested the solicitation, and will also post it on the Energy Commission's website at: www.energy.ca.gov/contracts. The Energy Commission will not reimburse applicants for application development expenses under any circumstances, including cancellation of the solicitation.

2. Modification or Withdrawal of Application

Applicants may withdraw or modify a submitted application before the deadline to submit applications by sending a letter to the Agreement Officer listed in Part I. Applications cannot be changed after that date and time. An Application cannot be "timed" to expire on a specific date. For example, a statement such as the following is non-responsive to the solicitation: "This application and the cost estimate are valid for 60 days."

3. Confidentiality

Though the entire evaluation process from receipt of applications up to the posting of the NOPA is confidential, **all submitted documents will become public records** after the Energy Commission posts the NOPA or the solicitation is cancelled. **The Energy Commission will not accept or retain applications that identify any section as confidential.**

4. Solicitation Errors

If an applicant discovers any ambiguity, conflict, discrepancy, omission, or other error in the solicitation, the applicant should immediately notify the Energy Commission of the error in writing and request modification or clarification of the solicitation. The Energy Commission will provide modifications or clarifications by written notice to all parties who requested the solicitation, without divulging the source of the request for clarification. The Energy Commission will not be responsible for failure to correct errors.

5. Immaterial Defect

The Energy Commission may waive any immaterial defect or deviation contained in an application. The Energy Commission's waiver will not modify the application or excuse the successful applicant from full compliance with solicitation requirements.

6. Disposition of Applicant's Documents

Upon the posting of the NOPA, all applications and related materials submitted in response to this solicitation will become property of the State and public records. Applicants who seek the return of any materials must make this request to the Agreement Officer listed in Part I, and provide sufficient postage to fund the cost of returning the materials.

E. STAGE ONE: APPLICATION SCREENING

SCREENING CRITERIA *The Application must pass ALL criteria to progress to Stage Two.*	**Pass/Fail**
1. The application is received by the Energy Commission's Contracts, Grants, and Loans Office by the due date and time specified in the "Key Activities Schedule" in Part I of this solicitation.	☐ Pass ☐ Fail
2. The application addresses only one of the eligible funding initiatives, as indicated on the Application Form.	☐ Pass ☐ Fail
3. The requested funding falls within the minimum and maximum range specified in Part I of this solicitation.	☐ Pass ☐ Fail
4. The applicant and project meet the Eligibility Criteria in Part II of this solicitation.	☐ Pass ☐ Fail
5. The application is prepared in the format specified in Part III, Section C of this solicitation.	☐ Pass ☐ Fail
6. The application is complete, meaning that it: (1) includes all documents required in Part III, Section C; (2) includes all information required within each document; and (3) is signed where required by an authorized representative.	☐ Pass ☐ Fail
7. The project date does not extend past the agreement end date specified in the "Key Activities Schedule" in Part I.	☐ Pass ☐ Fail
8. *For Funding Initiative 8.2 Projects:* o The Application Form identifies one or more pilot test site locations. o All pilot test sites are located in California electric IOU service territory (PG&E, SDG&E, or SCE) **or are based on use case and grid point connection sites located within California IOU service territory.** o The application includes a pilot test site commitment letter for each site identified on the Application Form. Each letter meets the requirements of Attachment 11.	☐ Pass ☐ Fail ☐ N/A (project does not involve pilot testing)
9. The application does not contain any confidential information or identify any portion of the application as confidential.	☐ Pass ☐ Fail
10. The applicant has not included a statement or otherwise indicated that it will not accept the terms and conditions, or that acceptance is based on modifications to the terms and conditions.	☐ Pass ☐ Fail
11. The application includes one or more support letters as described in Attachment 11.	☐ Pass ☐ Fail
12. Any project partner commitment letters meet the requirements of Attachment 11. *(If the proposal includes one or more match funding commitment letters that do not meet the requirements of Attachment 11, the proposal will be disqualified from consideration for match funding points).*	

F. STAGE TWO: APPLICATION SCORING

Proposals that pass ALL Stage One Screening Criteria will be evaluated based on the Scoring Criteria on the next page and the Scoring Scale below (with the exception of criteria 7 and 8, which will not use the Scoring Scale). Each criterion has an assigned number of possible points, and is divided into multiple sub-criteria. The sub-criteria are not equally weighted. The Project Narrative (Attachment 4) must respond to each sub-criterion, unless otherwise indicated.

- The scores for criteria 7 (ratio of unloaded labor rates to loaded labor rates) and 8 (match funding) will be calculated as described in each criterion.
- The total minimum passing score is **70.00 out of 100 points.**
- The minimum passing score for **criteria 1−4 is 49.00 points.** The points for criteria 5−8 will only be applied to proposals that achieve the minimum score for criteria 1−4.

SCORING SCALE

% of Possible Points	Interpretation	Explanation for Percentage Points
0%	Not Responsive	• The response fails to address the criteria. • The omissions, flaws, or defects are significant and unacceptable.
10-30%	Minimally Responsive	• The response minimally addresses the criteria. • The omissions, flaws, or defects are significant and unacceptable.
40-60%	Inadequate	• The response addresses the criteria. • There are one or more omissions, flaws, or defects or the criteria are addressed in a limited way that results in a low degree of confidence in the proposed solution.
70%	Adequate	• The response adequately addresses the criteria. • Any omissions, flaws, or defects are inconsequential and acceptable.
80%	Good	• The response fully addresses the criteria with a good degree of confidence in the applicant's response or proposed solution. • There are no identified omissions, flaws, or defects. Any identified weaknesses are minimal, inconsequential, and acceptable.
90%	Excellent	• The response fully addresses the criteria with a high degree of confidence in the applicant's response or proposed solution. • The applicant offers one or more enhancing features, methods, or approaches that exceed basic expectations.
100%	Exceptional	• All criteria are addressed with the highest degree of confidence in the applicant's response or proposed solution. • The response exceeds the requirements in providing multiple enhancing features, a creative approach, or an exceptional solution.

SCORING CRITERIA

The Project Narrative (Attachment 4) must respond to each criterion below, unless otherwise indicated. Any estimates of energy savings or GHG impacts must be calculated as specified in the **References for Calculating Electricity End-Use, Electricity Demand, and GHG Emissions (Attachment 12), to the extent that the references are applicable to the proposed project.**

Scoring Criteria	Maximum Points
1. Technical Merit and Need a. Provides a clear and concise description of the goals, objectives, technological or scientific knowledge advancement, and innovation in the proposed project. b. Explains how the proposed project will lead to technological advancement and breakthroughs that overcome barriers to achieving the state's statutory energy goals. c. Summarizes the current status of the relevant technology and/or scientific knowledge, and explains how the proposed project will advance, supplement, and/or replace current technology and/or scientific knowledge. d. Justifies the need for EPIC funding, including an explanation of why the proposed work is not adequately supported by competitive or regulated markets. e. Discusses the degree to which the proposed work is technically feasible and achievable. f. Provides a clear and plausible test plan that describes how energy savings and other benefits specified in the application will be determined and measured.	**20**
2. Technical Approach a. Describes the technique, approach, and methods to be used in providing performing the work described in the Scope of Work. Highlights any outstanding features. b. Describes how tasks will be executed and coordinated with various participants and team members. c. Identifies and discusses factors critical for success, in addition to risks, barriers, and limitations. Provides a plan to address them. d. Describes how the knowledge gained, experimental results, and lessons learned will be made available to the public and key decision-makers.	**20**

Scoring Criteria	Maximum Points
3. Impacts and Benefits for California IOU Ratepayers a. Explains how the proposed project will benefit California Investor-Owned Utility (IOU) ratepayers with respect to the EPIC goals of greater reliability, lower costs, and/or increased safety). b. Provides clear, plausible, and justifiable **quantitative** estimates of potential benefits for California IOU electricity ratepayers, including the following (*as applicable)*: annual electricity and thermal savings (kilowatt-hour and therms), peak load reduction and/or shifting, energy cost reductions, greenhouse gas emission reductions, air emission reductions (e.g., NOx), and water use and/or cost reductions. c. States the timeframe, assumptions, and calculations for the estimated benefits, and explains their reasonableness. d. Identifies impacted market segments in California, including size and penetration or deployment rates, with underlying assumptions. e. Discusses any **qualitative** or intangible benefits to California IOU electricity ratepayers, including timeframe and assumptions. f. Provides a cost-benefit analysis that compares project costs to anticipated benefits. Explains how costs and benefits will be calculated and quantified, and identifies any underlying assumptions.	**20**
4. Team Qualifications, Capabilities, and Resources a. Describes the organizational structure of the applicant and the project team. Includes an organizational chart that illustrates the structure. b. Identifies key team members, including the project manager and principal investigator *(include this information in Attachment 5, Project Team Form).* c. Summarizes the qualifications, experience, capabilities, and credentials of the key team members *(include this information in Attachment 5, Project Team Form)*. d. Explains how the various tasks will be managed and coordinated, and how the project manager's technical expertise will support the effective management and coordination of all projects in the application. e. Describes the facilities, infrastructure, and resources available to the team. f. Describes the team's history of successfully completing projects (e.g., RD&D projects) and commercializing and/or deploying results/products. g. Identifies past projects that resulted in a market-ready technology *(include this information in Attachment 9, Reference and Work Product Form)*. h. References are current, meaning within the past three years *(include this information in Attachment 9, Reference and Work Product Form)*.	**10**

Scoring Criteria	Maximum Points
i. Identifies any collaborations with utilities, industries, or others. Explains the nature of the collaboration and what each collaborator will contribute. j. Demonstrates that the applicant has the financial ability to complete the project, as indicated by the responses to the following questions: • Has your organization been involved in a lawsuit or government investigation within the past ten years? • Does your organization have overdue taxes? • Has your organization ever filed for or does it plan to file for bankruptcy? • Has any party that entered into an agreement with your organization terminated it, and if so for what reason? • For Energy Commission agreements listed in the application that were executed (i.e., approved at a Commission business meeting and signed by both parties) within the past five years, has your organization ever failed to provide a final report by the date indicated in the agreement? k. Support or commitment letters (for match funding, test sites, or project partners) indicate a strong level of support or commitment for the project.	
Total Possible Points for criteria 1- 4 (Minimum Passing Score for criteria 1- 4 is 49.00)	**70**
5. Budget and Cost-Effectiveness a. Justifies the reasonableness of the requested funds relative to the project goals, objectives, and tasks. b. Justifies the reasonableness of costs for direct labor, non-labor (e.g., indirect overhead and general and administrative costs, and subcontractor profit), and operating expenses by task. c. Explains why the hours proposed for personnel and subcontractors are reasonable to accomplish the activities in the Scope of Work (Attachment 6). d. Explains how the applicant will maximize funds for technical tasks and minimize expenditure of funds for program administration and overhead.	**10**

<table>
<tr><th>Scoring Criteria</th><th>Maximum Points</th></tr>
<tr><td>6. EPIC Funds Spent in California

Projects that spend EPIC funds in California will receive points as indicated in the table below. “Spent in California” means that: (1) Funds under the “Direct Labor” category and all categories calculated based on direct labor in the B-4 budget attachments (Prime and Subcontractor Labor Rates) are paid to individuals who pay California state income taxes on wages received for work performed under the agreement; and (2) Business transactions (e.g., material and equipment purchases, leases, rentals, and contractual work) are entered into with a business located in California.

Airline ticket purchases and payments made to out-of-state workers are not considered funds “spent in California.” However, funds spent by out-of-state workers in California (e.g., hotel and food) are considered funds “spent in California.”

<table>
<tr><th>Percentage of EPIC funds spent in CA
(derived from budget attachment B-2)</th><th>Percentage of Possible Points</th></tr>
<tr><td>>60%</td><td>20%</td></tr>
<tr><td>>70%</td><td>40%</td></tr>
<tr><td>>80%</td><td>60%</td></tr>
<tr><td>>90%</td><td>80%</td></tr>
<tr><td>>100%</td><td>100%</td></tr>
</table>
</td><td>15</td></tr>
<tr><td>7. Ratio of Direct Labor and Fringe Benefit Rates to Loaded Labor Rates

The score for this criterion will derive from the Rates Summary worksheet (Tab ~~B-8~~ <u>B-7</u>) in the budget forms, which compares the weighted direct labor and fringe benefits rate to the weighted loaded rate. This ratio, as a percentage, is multiplied by the possible points for this criterion.</td><td>5</td></tr>
<tr><td>Total Possible Points
(Minimum Passing Score is <u>70</u>)</td><td>100</td></tr>
<tr><td>8. Match Funding (Optional)

• Each match funding contributor must submit a commitment letter that meets the requirements of Attachment 11. Failure to meet these requirements will disqualify the proposal from consideration for match funding points.
• Any match funding pledged in Attachment 1 must be consistent with the amount or dollar value described in the commitment letter(s) (e.g., if $5,000 “cash in hand” funds are pledged in a commitment letter, Attachment 1 must match this amount). Failure to meet this requirement will disqualify the proposal from consideration for match funding points.
• 5 points for this criterion will be awarded based on the percentage of match funds relative to the EPIC funds requested. This ratio will be multiplied by 5 to yield the points, and rounded to the nearest whole number.

For example: If requested EPIC funds are $1,000,000 and match funds</td><td>10</td></tr>
</table>

Scoring Criteria	Maximum Points
are $500,000, the match funding ratio is 0.50. The proposal will be awarded 3 points (5 x 0.50 = 2.5, rounded to the nearest whole number = 3). • The remaining 5 points for this criterion will be based on the level of commitment, dollar value justification, and funding replacement strategy described in the match funding commitment letter (see Attachment 11). The proposal scoring scale in Section F will be used to evaluate these criteria.	